

REMARKS

At the time the current Official Action was mailed, the Examiner objected to claims 3-7 and indicated that claims 3-7 would be allowable if rewritten in independent form. Applicants thank the Examiner for indicating the allowable subject matter. The Examiner objected to claim 15 based on a perceived informality. Further, the Examiner rejected claims 1, 2, and 8-18. In view of the foregoing amendments and following remarks, Applicants respectfully request reconsideration of the present application.

Objections to the claims

The Examiner objected to claims 3-7 as being dependent upon a rejected base claim and indicated that claims 3-7 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim. As discussed further below, claim 2 was amended to include the subject matter previously recited in claim 5. Claims 4 and 5 were canceled. Claims 3, 6 and 7 are dependent on dependent claim 2, which is dependent on independent claim 1. In view of the amendments to claim 2 and the remarks below relating to the rejections of claims 1 and 2, Applicants respectfully submit that dependent claims 3, 6 and 7 are currently in condition for allowance, based on their dependency on allowable base claims, as well as for the subject matter separately recited in each of the claims. Accordingly, Applicants respectfully request allowance of claims 3, 6 and 7.

The Examiner objected to claim 15 because of a perceived informality. Specifically, the Examiner stated, "claim 15 limits the instant invention to a 'shingle stack.' It is believed the applicant meant 'single stack.'" Office Action, page 3. Applicants hereby confirm that the

recitation of a “shingle stack” was intended. Shingle stacks are described in the application as including die stacks wherein upper die may overhang die below them in the stack. Application, page 14. Indeed, Figs. 5C and 5D of the application are cross-sectional views of exemplary shingle stacks in accordance with embodiments of the present invention. In view of the teachings of the present application, applicants respectfully assert that claim 15 does not contain a typographical error and request that the Examiner withdraw the objection to claim 15.

Rejections under 35 U.S.C. § 101 Double Patenting

The Examiner rejected claim 2 under 35 U.S.C. § 101 as claiming the same invention as that of claim 7 of prior U.S. Patent No. 6,682,955. Specifically, the Examiner stated:

Claim 7 (and underlying claim 1) of US patent 6,682,955 recite all of the positive steps of claim 2 (with underlying claim 1) of the instant application except for the step of “forming a stack of at least two semiconductor die.” However, claim 1 of 6,682,955 does recite “a method of stacking semiconductor die,” and “placing the adhesively coated underside of the first die against the topside of the second die, thereby forming a die stack.” Thus the positive step of forming the die stack of two or more is taught using alternative language.

Office Action, page 2.

As presented above in the listing of claims, Applicants presently amend claim 2. Specifically, Applicants amend claim 2 to include subject matter from claim 5 that the Examiner indicated as allowable. *See* Office Action, page 7. In view of the present amendment, Applicants assert that claim 2 is clearly *not* coextensive with claim 7 of prior U.S. Patent No. 6,682,955. Accordingly, Applicants respectfully request withdrawal of the rejection of claim 2

under 35 U.S.C. § 101. Further, Applicants request that the Examiner provide an indication of allowability of amended claim 2.

Rejections under 35. U.S.C. § 102

The Examiner rejected claims 1, 11-13, 15 and 16 under 35 U.S.C. § 102 as being anticipated by Jiang et al. (U.S. Patent No. 6,343,019). Specifically, the Examiner stated:

Jiang teaches all of the positive steps of claims 1, 11-13, and 15-16 in that a stack is formed of at least two die (20 and 42) and the stack is placed on a temporary holding surface (column 3 lines 55-58, “the outer die and inner die may be secured to each other prior to being mounted in the first recess.” *If they are mounted to each other, there must exist some form of temporary holding surface.*)

Office Action, page 2 (emphasis added).

Applicants respectfully traverse this rejection. Anticipation under Section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under Section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). To maintain a proper rejection under Section 102, a single reference must teach each and every element or step of the rejected claim. *Atlas Powder v. E.I. du Pont*, 750 F.2d 1569 (Fed. Cir. 1984). Thus, if the claims recite even one element not found in the cited reference, the reference does not anticipate the claimed invention.

Additionally, if the Examiner relies on a theory of inherency, the extrinsic evidence must make clear that the missing descriptive matter is *necessarily* present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. *In re Robertson*, 169 F.3d 743, 49 U.S.P.Q.2d 1949 (Fed. Cir. 1999) (Emphasis Added). The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient. *Id.* In relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied prior art. *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). The Examiner, in presenting the inherency argument, bears the evidentiary burden and must adequately satisfy this burden. *See id.*

The present application relates to an improved stacked die module and techniques for forming an improved stacked die module. Application, page 2. Specifically, techniques and embodiments disclosed in the present application address problems with existing design techniques by reducing packaging costs and potential for package damage. *See id.* at 10. In existing techniques, die are typically stacked from the surface of a substrate, requiring multiple iterations and significant handling by die attach machines. *Id.* Such die stacking equipment may be costly, slow and inaccurate. *Id.* Further, with chip design yielding increasingly thinner die, excess handling of individual die in a conventional stacking process may increase the likelihood of damage to die. *Id.* Embodiments of the present invention address these problems by forming a die stack prior to attaching the die stack to a substrate. *Id.* at 12.

Accordingly, independent claim 1 of the present invention recites, in relevant part, “forming a stack of at least two semiconductor die; and placing the *stack* onto a temporary holding surface.” (Emphasis added). In other words, in some embodiments of the present invention the stack is not *formed* on a substrate or temporary holding surface, it is *placed* there as a *stack* of at least two semiconductor die. Thus, embodiments of the present invention limit handling of the semiconductor die and improve operational and cost efficiencies.

In contrast, the Jiang reference merely discloses that “the outer die 20 and the inner die 42 may be secured to each other prior to being mounted in the first recess 18.” Jiang et al., col. 3, lines 55-57. Applicants respectfully assert that the Jiang reference does not teach or suggest *placing* the *stack* onto a temporary holding surface. While the Examiner appears to suggest that placing the stack onto a temporary holding surface is inherently disclosed, Applicants respectfully remind the Examiner that the mere fact that a certain thing *may* result from a given set of circumstances is not sufficient. Indeed, Applicants assert that *placing* the *stack* onto a temporary holding surface is not *necessarily* present in the Jiang reference. In other words, even if the outer die 20 and the inner die 42 are secured to each other prior to being mounted in the first recess 18, there is nothing in the Jiang reference to suggest that once the outer die 20 and the inner die 42 are secured to each other that they are ever placed on a temporary holding surface. Accordingly, Applicant’s respectfully submit that the Examiner’s evidentiary burden for inherency has not been satisfied.

In view of the deficiencies discussed above, Applicants assert that the Jiang reference fails to disclose each and every element recited in independent claim 1. Therefore, Applicants

respectfully request withdrawal of the Examiner's rejection and allowance of claim 1. Further, claims 11-13, 15 and 16 depend from independent claim 1. Accordingly, Applicants respectfully request withdrawal of the Examiner's rejection and allowance of claims 11-13, 15 and 16 based on their dependencies on claim 1 and for the unique subject matter separately recited in each of the claims.

Rejections under 35 U.S.C. § 103

The Examiner rejected claims 8, 9, 14, 17 and 18 under 35 U.S.C. § 103(a) as being unpatentable over Jiang et al. in view of Pai et al. (U.S. Patent No. 6,503,776). Additionally, the Examiner rejected claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Jiang et al. in view of Pai et al. and in further view of Moden (U.S. Patent No. 5,719,440).

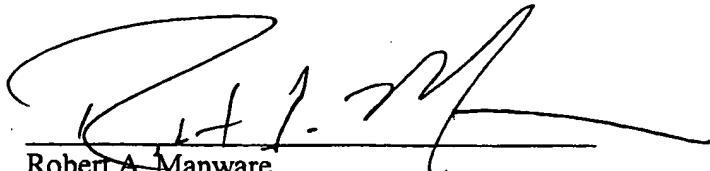
The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (Bd. Pat. App. & Inter. 1985).

As discussed above with respect to the rejections under 35 U.S.C. § 102, Applicants assert that independent claim 1 is presently allowable. As discussed in detail above, the Jiang reference fails to disclose each of the elements recited in independent claim 1. For this reason alone, Applicants respectfully submit that claims 8-10, 14, 17 and 18, which are dependent thereon, are also allowable. Applicants submit that neither the Pai reference, nor the Moden reference cures the deficiencies discussed above with respect to the allowable base claim. Accordingly, the cited references, taken alone or in combination, do not disclose all of the presently claimed elements. Thus, a *prima facie* case of obviousness has not been established. Applicants respectfully request withdrawal of the Examiner's rejections under 35 U.S.C. § 103 and allowance of claims 8-10, 14, 17 and 18.

Conclusion

In view of the remarks set forth above, Applicants respectfully request reconsideration of the Examiner's rejections and allowance of all pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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